

20-8768



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

D2600-3-BENT-LH
Job Sheet 186443



Part No: D2600-3-BENT-LH

Job Qty: 10 ea

Part Name: Extrusion Bent LH



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 11/15/18

Job Tracking No:

Due Date: 11/30/18

Created By: Jesse White

Type: Stock

Description:

Note: DWG D2750 REV G SHEET 4, D2600 REV E SHEET 2 IPP REV:A 14.01.14 NEW ISSUE DD VERF:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	10 Ea	11/30/18	11/30/18	0.00	0.00	Start Up Skid tubes-3		MG
100	CNC Bend Skid tubes	10 pcs	11/30/18	11/30/18	0.20	3.22	CNC Bend Skid tube		MG
110	QC	10 pcs	11/30/18	11/30/18	0.00	0.00	QC5		MG
120	Packaging	10 pcs	11/30/18	11/30/18	0.00	0.00	Packaging3-1		MG
130	QC21-SA	10 Ea	11/30/18	11/30/18	0.00	0.00	QC21		MG

Part Op 100 - Pick qty 1 D2600-3-130 extrusion 1-Deburr one end of extrusion 2-Bend using CNC bending machine as per

Descriptions: program 2750.C and Folio 14 use bending aid DT9635 3- cut fwd end of tube as per dwg D2750 4- cut aft end of tube as per dwg D2750

120 - LOCATION : LG002

21 JAN 03 2019

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D2600-3-130	Extrusion Round 3" 350	10 Ea (1 ea)	90-Start up Operation	(5) 5046305 5124531 (5)

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D2600-3-130	10	155	0

Part Specifications

Specifications could not be found.

Plex 11/15/18 12:49 PM dart.white.jesse

P.T.O.



Container No: S129373



Part: D2600-3-BENT-LH

Job No: 186443

Serial No/Batch: S129373

Revision:

Inspector:

Exp Date:

Instructions:

Dart Aerospace Ltd.
1270 Aberdeen Street
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CANADA
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Email: sales@dartaero.com
www.dartaerospace.com

Date: 11/20/19

QTY -041	QTY -042	QTY -043	QTY -044	QTY -051	QTY -052	PIN	DESCRIPTION
X						D2750-041	350 SKIDTUBE ASSEMBLY, LH
	X					D2750-042	350 SKIDTUBE ASSEMBLY, RH
		X				D2750-043	350 SKIDTUBE ASSEMBLY, LH
			X			D2750-044	350 SKIDTUBE ASSEMBLY, RH
				X		D2750-051	350 SKIDTUBE ASSEMBLY, LH
					X	D2750-052	350 SKIDTUBE ASSEMBLY, RH
1	1	1	1	1	1	D2739	WEB
8	8	8	8	8	8	D2743	CROSS BOLT SPACER
1	1	1	1	1	1	D2744	CAP
8	8	8	8	8	8	D2745	BUSHING
1						D2750-1	350 SKIDTUBE ASSEMBLY
	1					D2750-2	350 SKIDTUBE ASSEMBLY
		1				D2750-3	350 SKIDTUBE ASSEMBLY
			1			D2750-4	350 SKIDTUBE ASSEMBLY
				1		D2750-5	350 SKIDTUBE ASSEMBLY
					1	D2750-6	350 SKIDTUBE ASSEMBLY
1		1		1		D3488-3	BLADE FITTING, LH
	1		1		1	D3488-4	BLADE FITTING, RH
4	4	4	4			D3490-1	CROSS BOLT SPACER
4	4					D3490-3	CROSS BOLT SPACER
		4	4			D3490-5	CROSS BOLT SPACER
8	8	8	8			D3492-041	PLUG
8	8					D3492-043	PLUG
		8	8			D3492-045	PLUG
3	3	3	3	3	3	D3537-1	WEARPAD
8	8	8	8	8	8	D3631-1	WASHER
1	1	1	1	1	1	D3791-1	WEARPLATE
1	1	1	1	1	1	D3793-1	WEARSHOE
1	1	1	1	1	1	D3793-3	WEARSHOE
1	1	1	1	1	1	D3793-5	WEARSHOE
38	38	38	38	38	38	ALS4-1032-225	INSERT
				1	1	AN3C34A	BOLT
34	34	34	34	34	34	AN3C5A	BOLT
4	4	4	4	4	4	AN3C8A	BOLT
4	4	4	4	4	4	AN6C44A	BOLT
1	1	1	1	1	1	AN6C35A	BOLT
				1	1	MS21043-3	NUT
4	4	4	4	4	4	MS21043-5	NUT
1	1	1	1	1	1	MS21083C8	NUT
38	38	38	38	38	38	NAS1149C0332R	WASHER
				2	2	NAS1149C0333R	WASHER
1	1	1	1	1	1	NAS1149C0332R	WASHER
4	4	4	4	4	4	NAS1615H3L	WASHER

NOTES:

- 1) MATERIAL: MAKE D2750-1/-2/-3/-4/-5/-6 FROM D2600-3 EXTRUSION (INITIAL LENGTH = 120.0).
- 2) FINISH: ACID ETCH, ALODINE ASSEMBLY PER DART QSI 005 4.1 PRIOR TO INSTALLING D2739 WEB. STANDARD: PRIME (REF. 4.2.1.3.3) AND PAINT WHITE PER DART QSI 005 4.2
OPTIONAL: POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: D2750-041/-042/-043/-044 = 26.1 lbs
D2750-051/-052 = 25.7 lbs
- 8) WELD PER DART QSI 004
- 9) INSTALL ALS4-1032-225 INSERTS AFTER FINISH AS INDICATED. DRILL 19/64" SIZE HOLES ($\phi 0.297$) FOR WEARSHOE INSERTS
- 10) FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
MINIMUM YIELD TENSILE STRENGTH = 35 KSI
MINIMUM ULTIMATE TENSILE STRENGTH = 38 KSI
- 11) COAT ALL EXPOSED FASTENERS WITH LPS LABORATORIES "LPS PROCYON" AFTER FINAL ASSEMBLY. CLEAN EXCESS OFF FINISH WITH MEK DEGREASER.
- 12) SPACER AND PLUG INSTALLED SAME AS SECTION AJ-AJ EXCEPT HORIZONTAL
- 13) SPACER AND PLUG INSTALLED SAME AS SECTION AP-AP EXCEPT HORIZONTAL

H	ADDED -051/-052 (ZN D5-1 SHEETS 4, 15-15); ADDED D2750-5/-6 (ZN C5-1 SHEETS 9, 10); D3488-3/-4 REPLACES D3488-041/-042 (ZN C5-1, D2-11/-12/-13/-14); D3793-5 REPLACES D3835-25 (ZN B5-1, C4-11/-12/-13/-14); NAS1149C0332R REPLACES AN600C10L (ZN A5-1, B1-11/-12/-13/-14, C7-11/-12/-13/-14); WAS1149C0333R REPLACES AN600C06L (ZN A5-1, C1-11/-12/-13/-14); REMOVED D3794-1/-3, AND D3835-25 GASKETS	ZP	18.03.05
G	CORRECTED TOLERANCE ON $\phi 0.500$ THRU HOLE: IS +0.01/-0.000, WAS +0.100/-0.000 (ZN B3-4, B2-5); ADD VIEW TO CONTROL FWD BEND ORIENTATION (ZN D-1-4-8-9-7); UPDATED FINISH OPTIONS; INSIDE OF TUBE NO LONGER SPRAYED WITH LPS-3; REASON: PAR13-276 AND NCR13-2757	MB	13.07.11
F	INCORPORATE DSI 9413; QTY (3) D3537-1 WAS QTY (5) (ZN C8-1); D3791-1/-3 REPLACES D3635-13/-35 (ZN C8-1); D3794-1/-3 REPLACES D3635-13/-35 (ZN B8-1); ADD D3791-1 (ZN C8-1); WEARSHOE HOLES UNDER FWD/AST SADDLE REMOVED (8 PL); WEARSHOE HARDWARE QTY UPDATED (ZN B6-1); D3488-041/-042 HARDWARE UPDATED (ZN C1-8, 9, 10, 11); ADD NOTE 12 AND 13 (ZN A5-1); REASON: REF. NCR 08-043	PH	08.07.16
E	CHANGE TO STAINLESS STEEL WEARPLATES; ADD RUBBER GASKETS; CHANGE INSERTS; ADD D3631-1; REMOVE QTY (38) NAS1515H3L; REMOVE QTY (10) NAS1515H3L; REMOVE D2741; QTY (2) AN600C06L; REMOVE QTY (2) MS21083C8	CB	07.05.17
D	ADD HOLES AND SPACERS FOR APICAL FLOATS; INCORPORATE DED 9135/9157	PH	06.01.05
C	ADD D2750-3/D2750-4; INCORPORATE D2739 AND D2740	CP	06.11.18
B	CHANGE MS24084-5283 TO AN6-16A	CP	08.09.01
A	NEW ISSUE	DS	06.04.16
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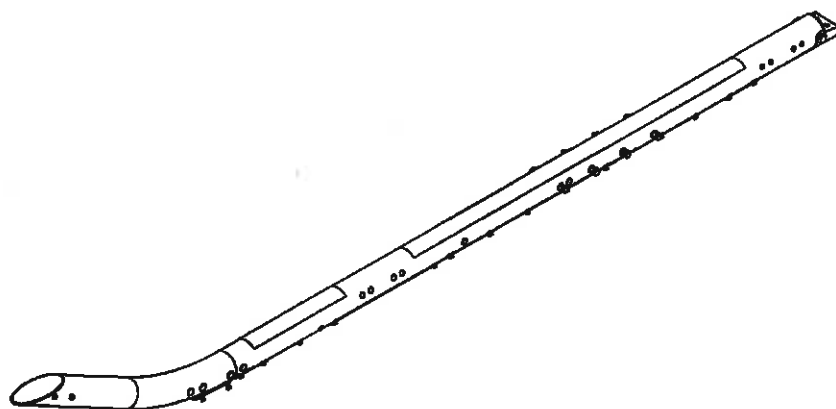
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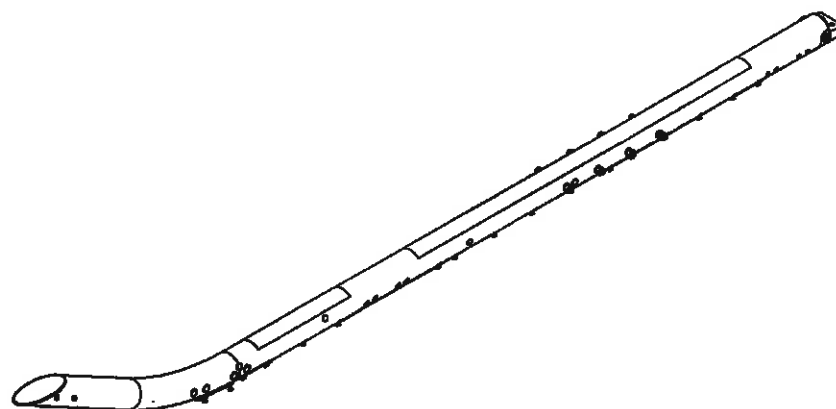
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D2750-041 350 SKIDTUBE ASSEMBLY, LH



D2750-042 350 SKIDTUBE ASSEMBLY, RH

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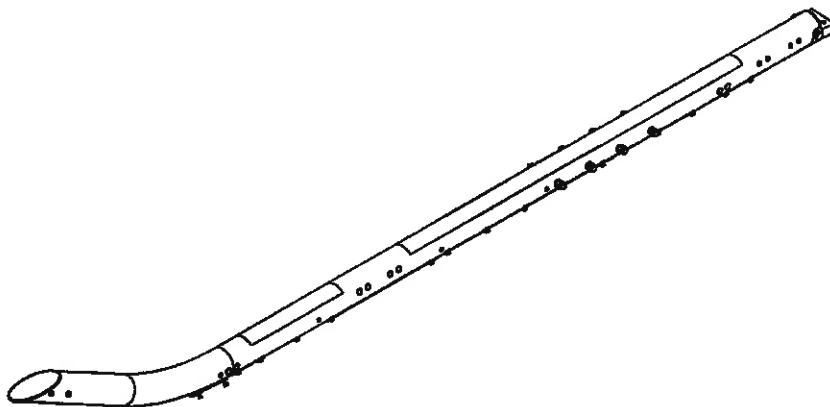
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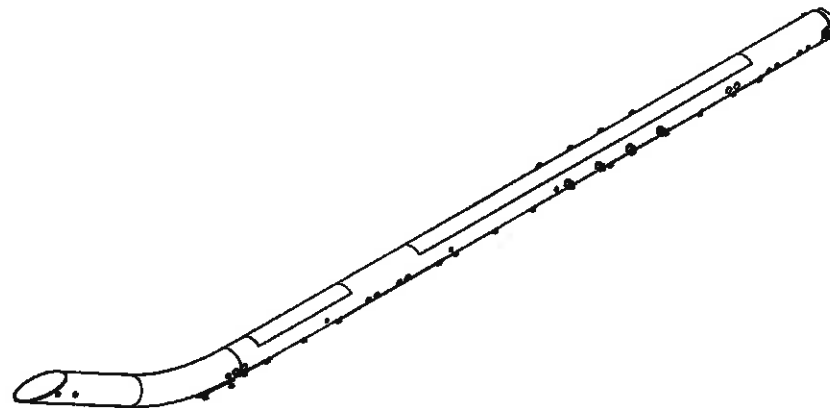
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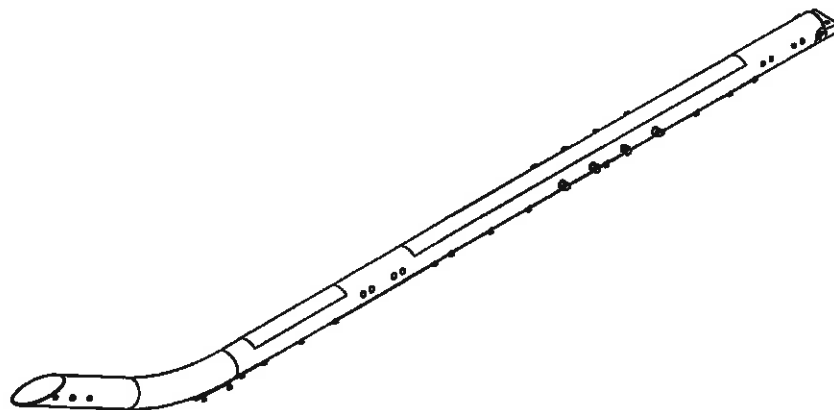
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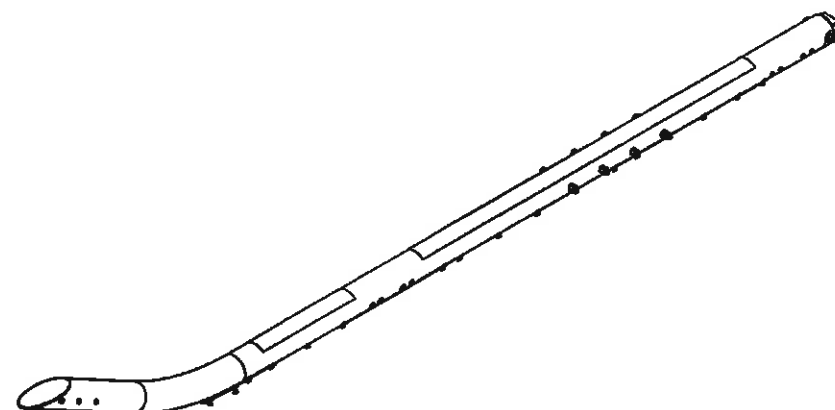
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8 7 6 5 4 3 2 1



D2750-051 350 SKIDTUBE ASSEMBLY, LH



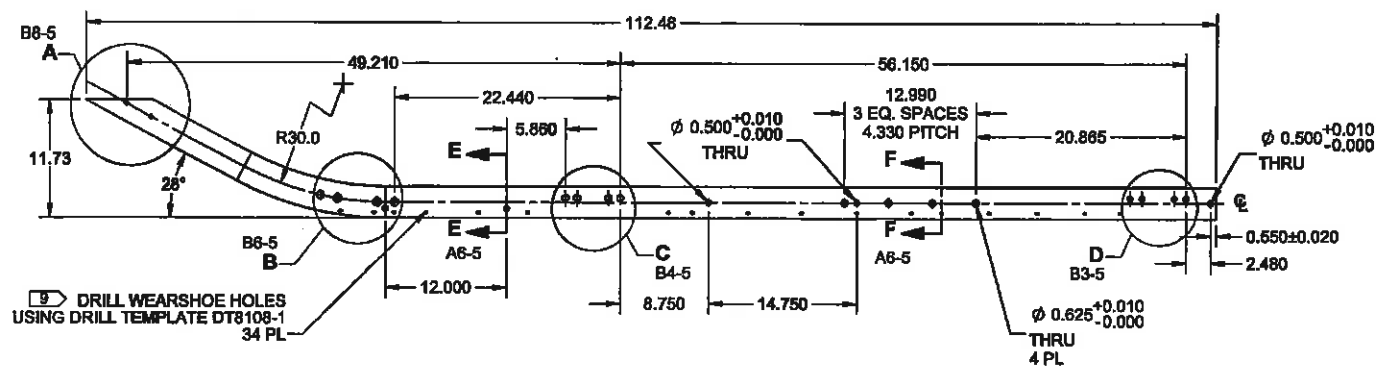
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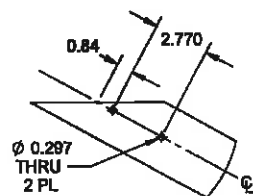
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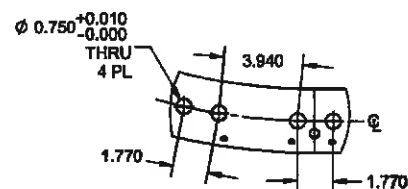
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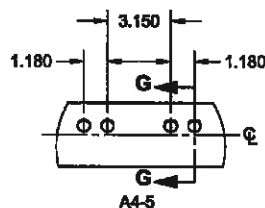
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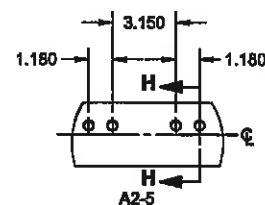
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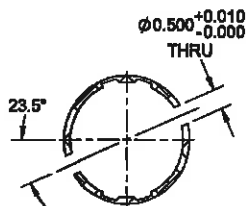
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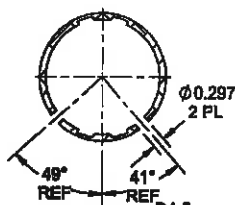
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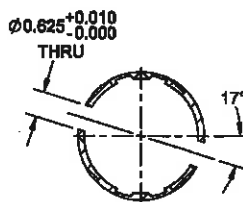
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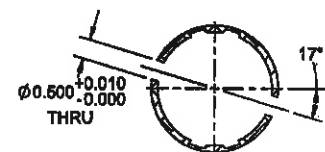
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SCALE 4X, 2 PL



SECTION F-F
SCALE 4X, 17 PL



SECTION G-G
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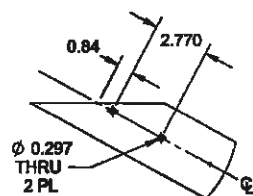
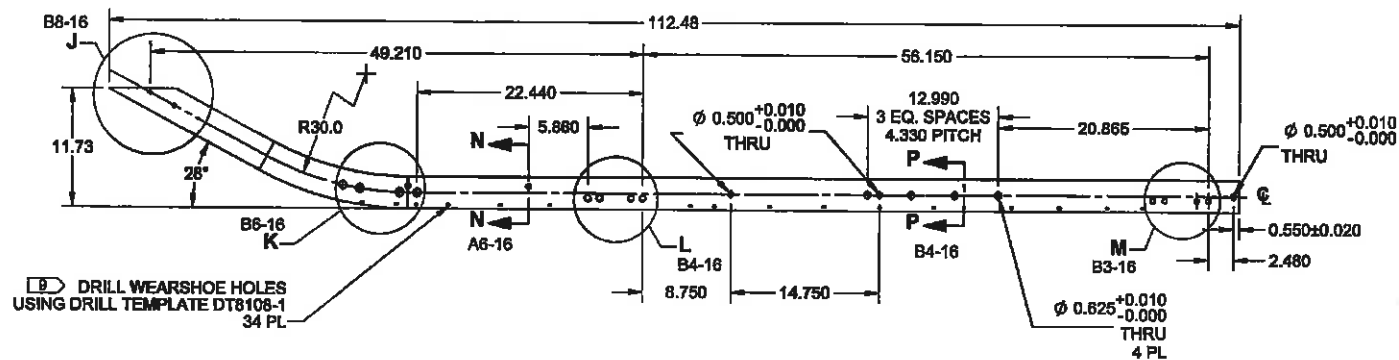


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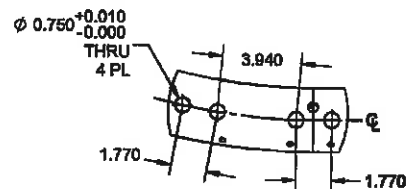
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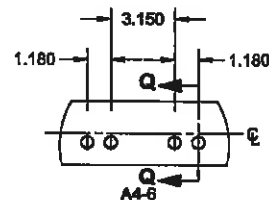
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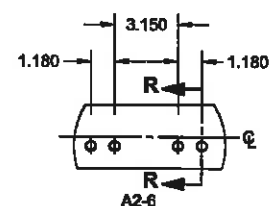
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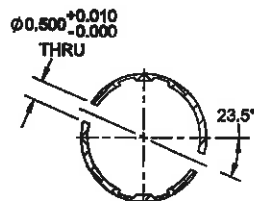
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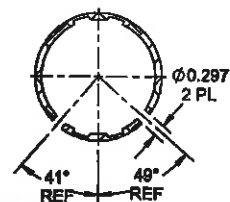
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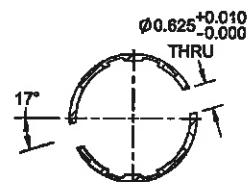
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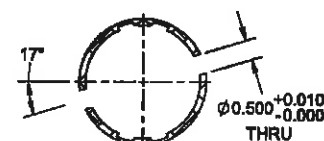
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D4-6



B4-6

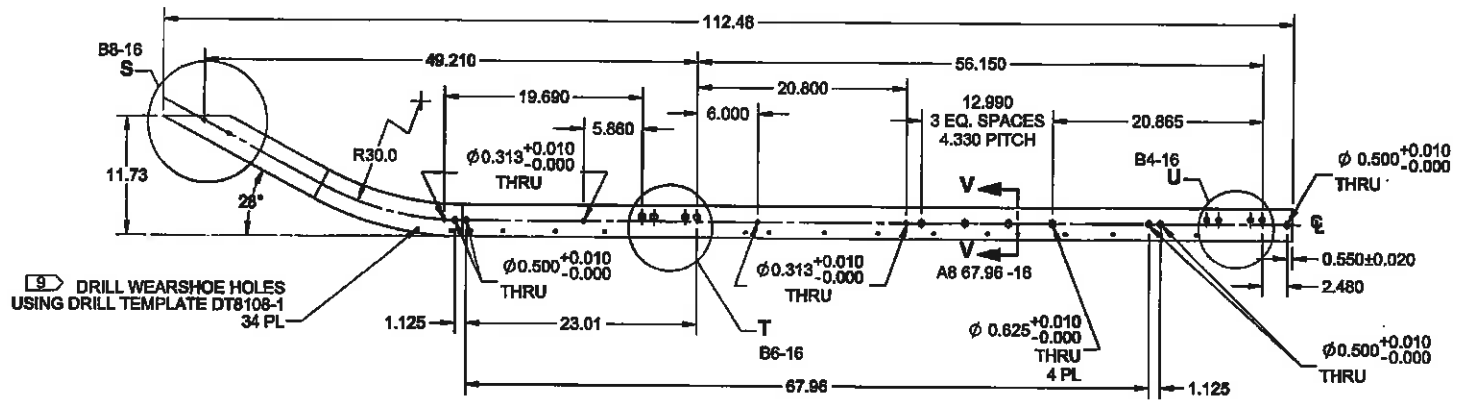


B2-6

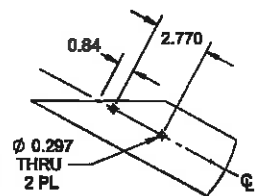
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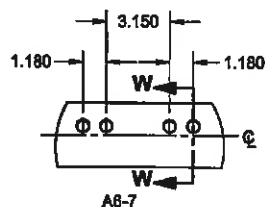
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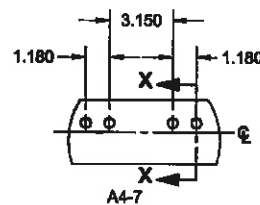
D2750-3 LH SKIDTUBE



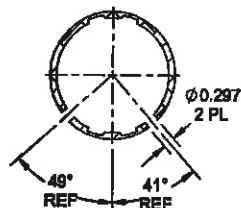
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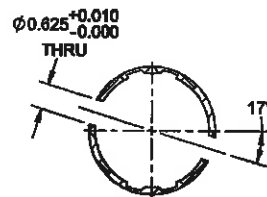
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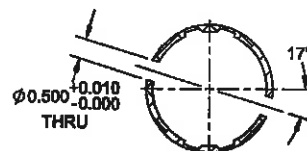
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SECTION V-V
SCALE 4X, 17 PL



SECTION W-W
SCALE 4X, 4 PL



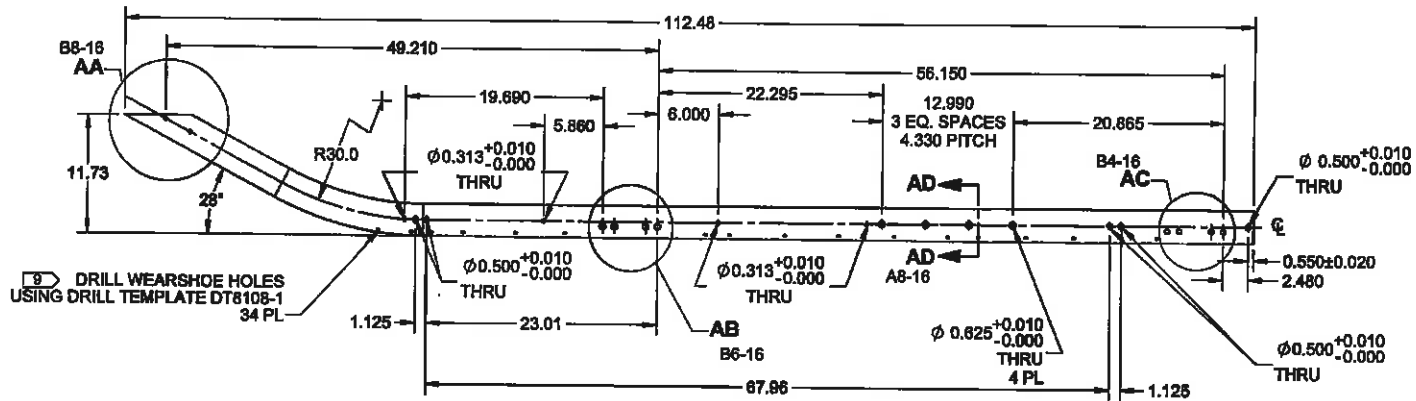
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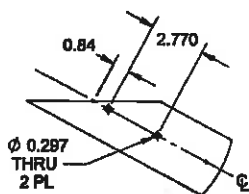
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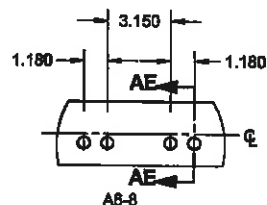
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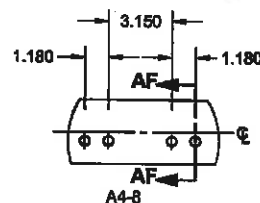
D2750-4 RH SKIDTUBE



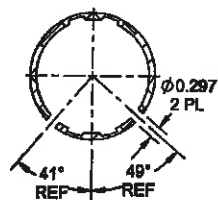
DETAIL AA
SCALE 2X



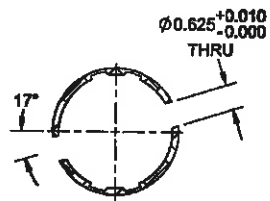
DETAIL AB
SCALE 2X



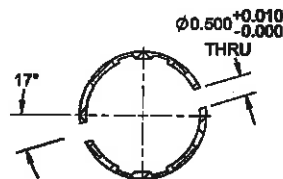
DETAIL AC
SCALE 2X



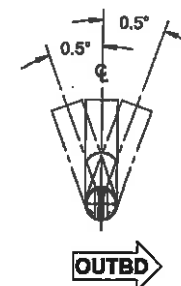
SECTION AD-AD
SCALE 4X, 17 PL



SECTION AE-AE
SCALE 4X, 4 PL



SECTION AF-AF
SCALE 4X, 4 PL



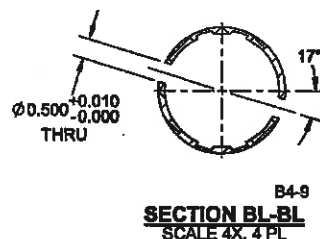
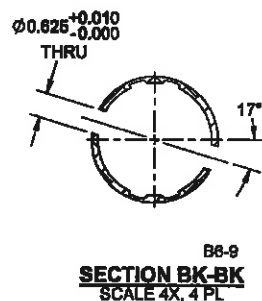
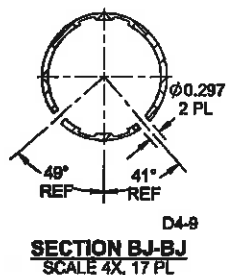
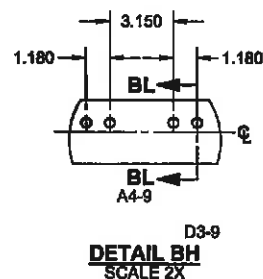
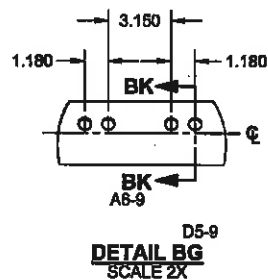
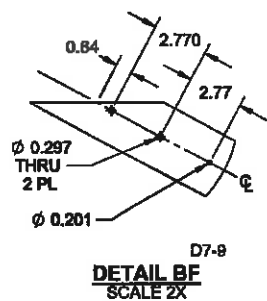
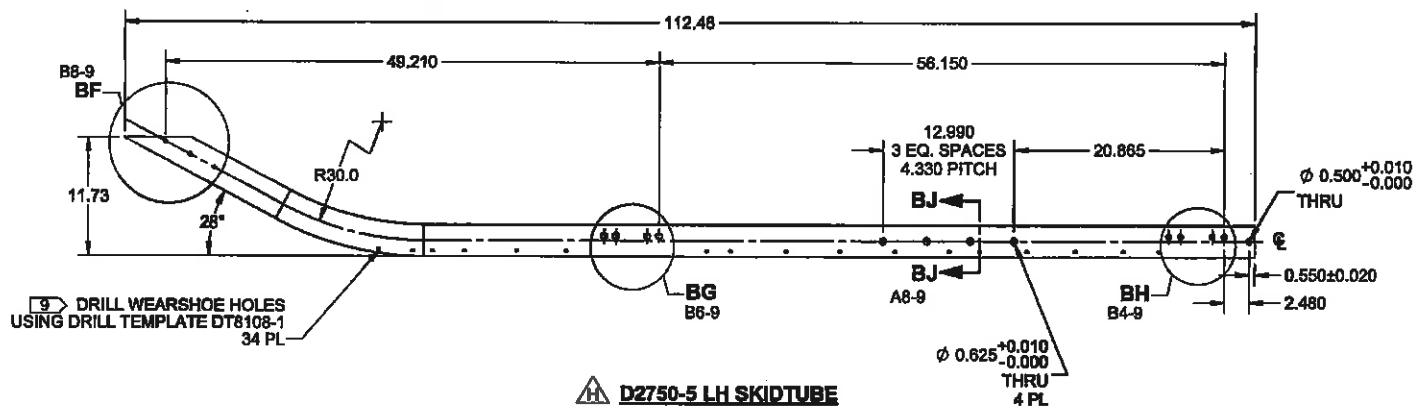
MAX ALLOWABLE
TWIST ON FWD BEND
(VIEW LOOKING FWD)

RELEASED

2018 OCT 1 9

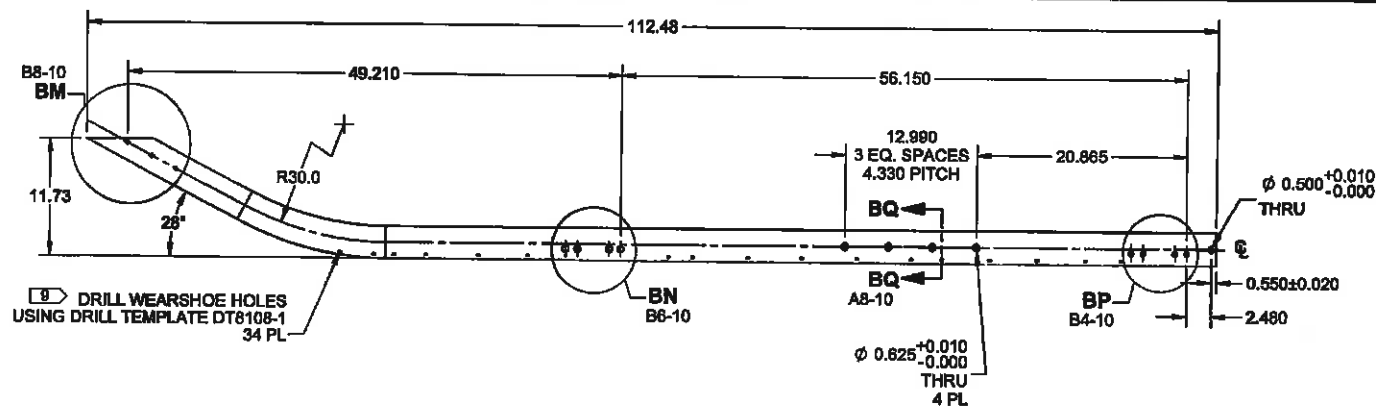
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DRAWN	ZF		
CHECKED	MW	DRAWING NO.	REV. H
MFG. APPR.	DD	D2750	SHEET 8 OF 16
APPROVED	NO	TITLE	SCALE
DE APPR.	DS	350 SKIDTUBE ASSEMBLY	NTS
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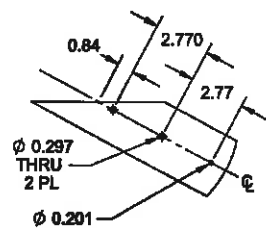


RELEASED
2019 OCT 19

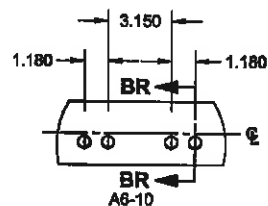
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	CHECKED	MW	DRAWING NO. D2750	REV. H
	MFG. APPR.	DD	SHEET 9 OF 18	
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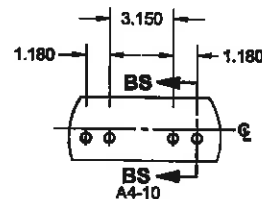
D2750-6 RH SKIDTUBE



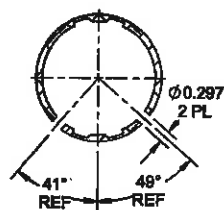
DETAIL BM
SCALE 2X



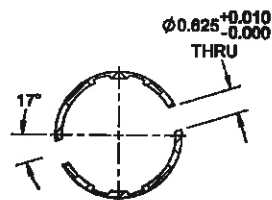
DETAIL BN
SCALE 2X



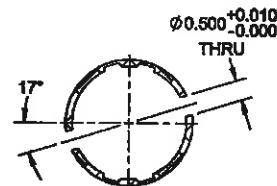
DETAIL BP
SCALE 2X



SECTION BQ-BQ
SCALE 4X, 17 PL



SECTION BR-BR
SCALE 4X, 4 PL



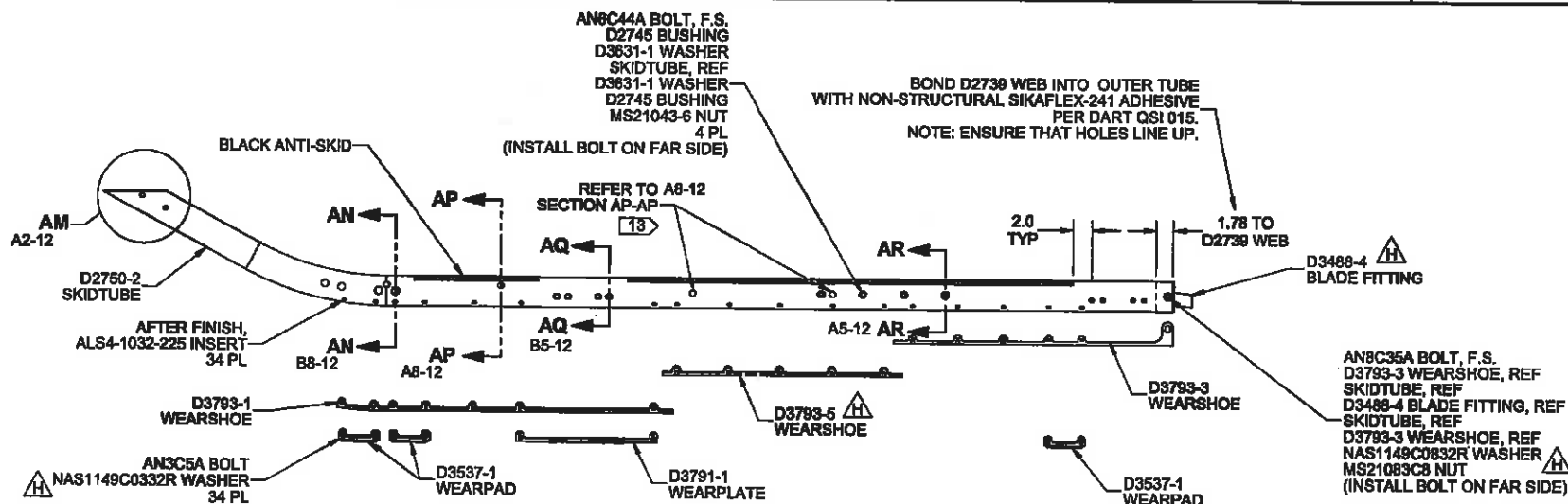
SECTION BS-BS
SCALE 4X, 4 PL

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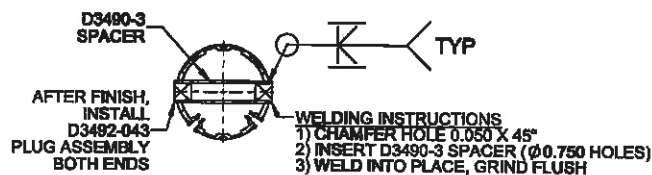
2019 OCT 19

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DESIGN	MM	DART AEROSPACE USA, INC. ELIZABETH, OR	
DRAWN	ZF		
CHECKED	MW	DRAWING NO.	REV. H
MFG. APPR.	DD	D2750	SHEET 10 OF 16
APPROVED	NO	TITLE	SCALE
DE APPR.	DS	350 SKIDTUBE ASSEMBLY	NTS
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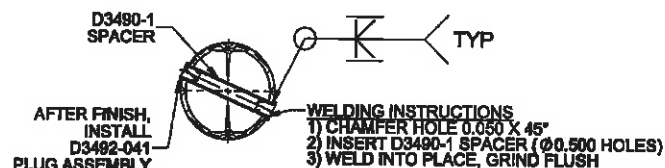
D2750-042 350 SKIDTUBE ASSEMBLY, RH



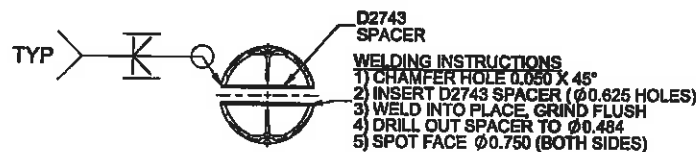
SECTION AN-AN
SCALE 3X, 4 PL



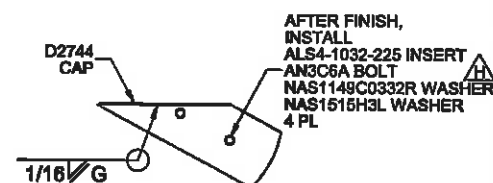
SECTION AQ-AQ
SCALE 3X, 4 PL



SECTION AP-AP
SCALE 3X, 4 PL



SECTION AR-AR
SCALE 3X, 4 PL
(HARDWARE REMOVED FOR CLARITY)

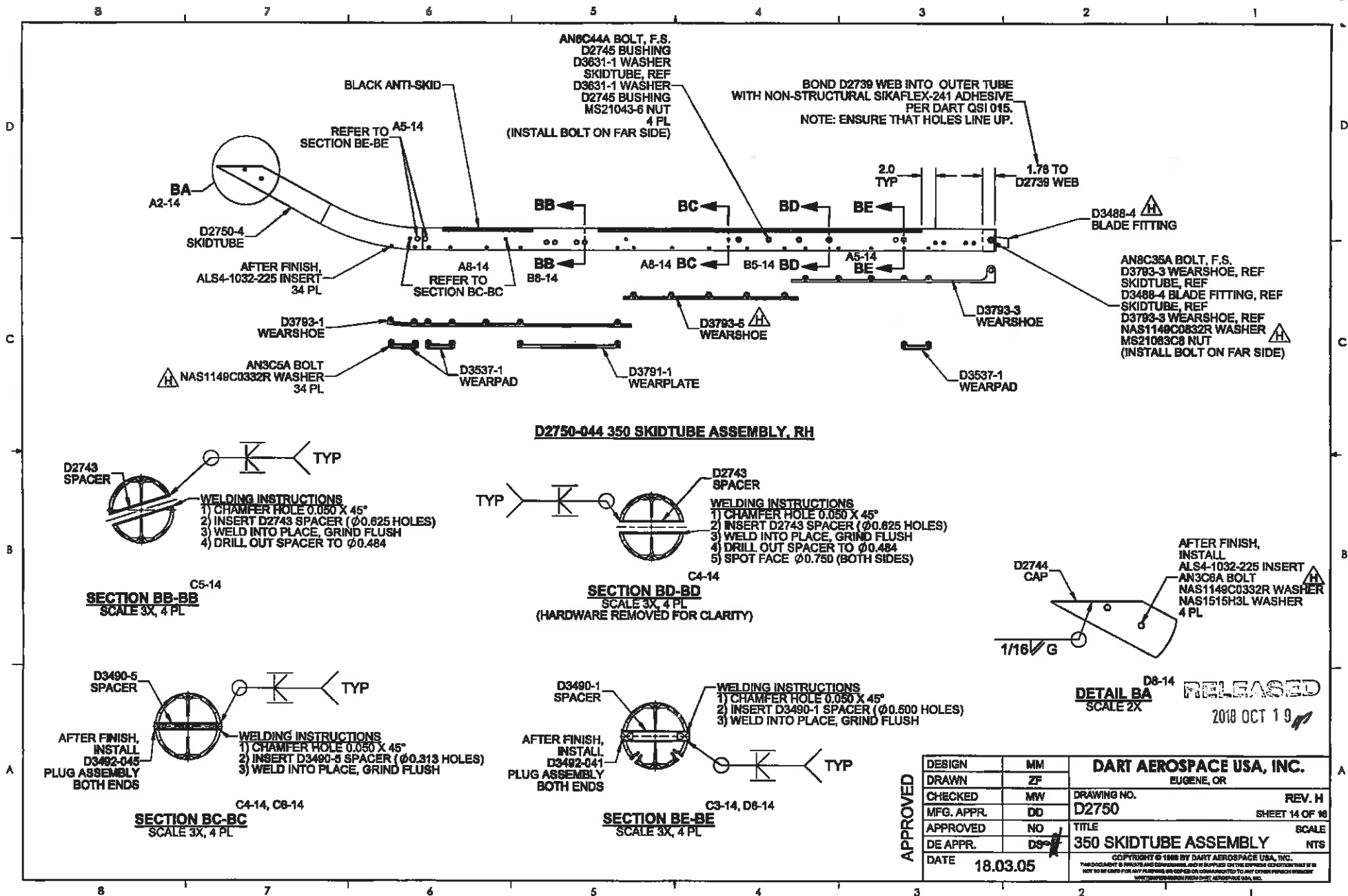


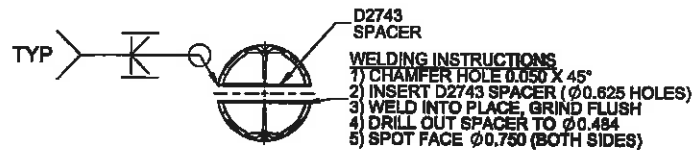
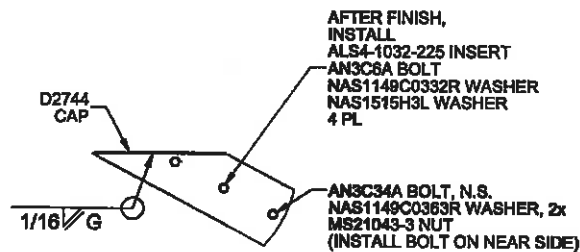
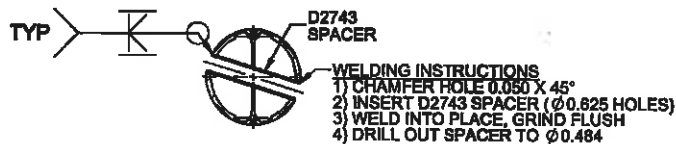
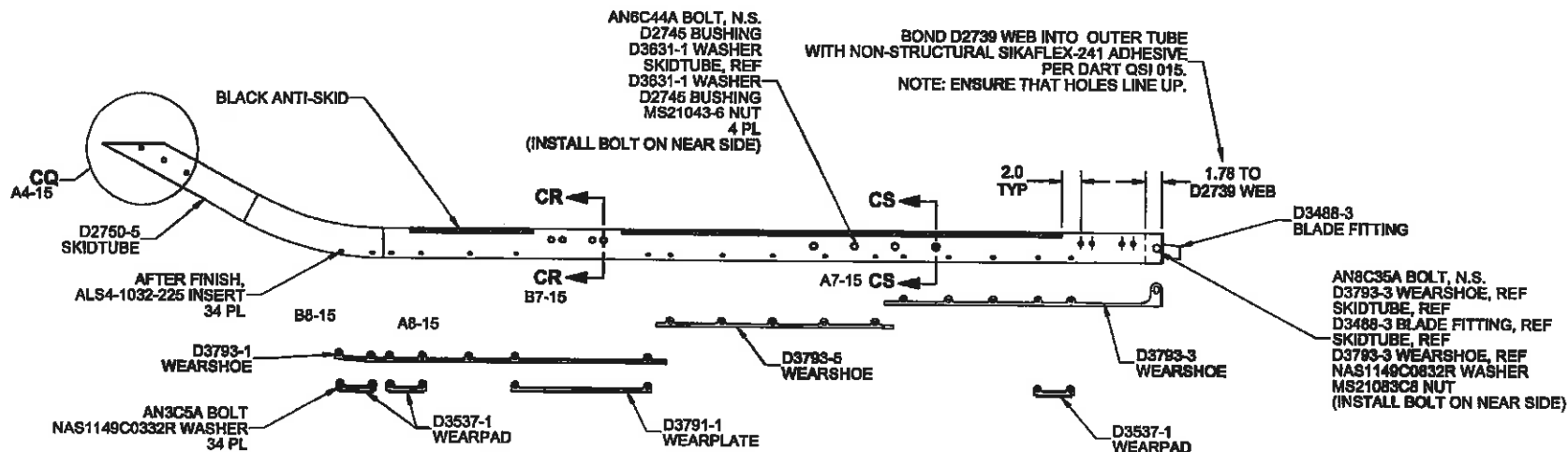
DETAIL AM
SCALE 2X

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2010 OCT 19

APPROVED	DESIGN	MM	DART AEROSPACE USA, INC. EUGENE, OR	
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	CHECKED	MW	DRAWING NO.	REV. H
	MFG. APPR.	DD	D2750	SHEET 12 OF 18
	APPROVED	NO	TITLE	SCALE
	DE APPR.	DS	350 SKIDTUBE ASSEMBLY	NTS
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2018 OCT 19

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	CHECKED	MW	DRAWING NO.	REV. H
	MFG. APPR.	DD	D2750	SHEET 15 OF 16
	APPROVED	NO	TITLE	SCALE
	DE APPR.	DS	350 SKIDTUBE ASSEMBLY	NTS
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DQA: _____ Date: _____

QA Closed: 2R Date: DEC 14 2020

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only ☐

Work Order: <u>186443</u> Part No. <u>D2600-3 Bent-LH</u> NCR No. <u>20-8768</u>		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☒</td> <td>Cross tube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☒	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																																	
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Date: <u>11-12-10</u>		Step #: <u>100</u>		QTY Effective: <u>3</u>		MRB (QSI042) Approval <u>12</u> <u>12/1/02</u>																																																																	
Description Work Order Deviation				Disposition		Completed By																																																																	
<u>3 TUBES UNDERBENT. LENGTH AND HEIGHT GOOD. ANGLE OF BENDS SHOULD BE 28°</u> <u>ACTUAL ANGLES ARE 26.8°, 27°, 27.1°</u>				<u>Acceptable.</u> <u>Step hole Step hole horizontal spacing increased by 0.161" (@ 26.8°). Step allows 0.338" of play.</u>		<u>BE</u> <u>12/1/02</u> Lead hand / Supervisor Approval Verification																																																																	
						<u>18-01-04</u> QC / QA Coordinator Approval																																																																	
						<u>9-88</u> <u>20-09-22</u>																																																																	
Root Cause <table style="width:100%;"> <tr> <td>Environment ☐</td> <td>No Re-verification ☐</td> </tr> <tr> <td>Design ☐</td> <td>Operator ☐</td> </tr> <tr> <td>Doc/Data ☐</td> <td>Offset/Setup ☐</td> </tr> <tr> <td>Equip/Tooling ☐</td> <td>Supplier ☐</td> </tr> <tr> <td>Handling/Pre ☐</td> <td>Training ☐</td> </tr> <tr> <td>Material ☐</td> <td>Use for Testing ☐</td> </tr> <tr> <td>Internal Transport ☐</td> <td>Poor Information ☐</td> </tr> <tr> <td>Tribal Knowledge ☐</td> <td>Rushing ☐</td> </tr> <tr> <td>LOA ☐</td> <td>Product Improvement ☐</td> </tr> <tr> <td>Substation ☐</td> <td>Process Improvement ☐</td> </tr> <tr> <td>Past Expiry Date ☐</td> <td>☒ Manufacturing Process</td> </tr> <tr> <td>Misidentified ☐</td> <td>Past Due ☐</td> </tr> </table>				Environment ☐	No Re-verification ☐	Design ☐	Operator ☐	Doc/Data ☐	Offset/Setup ☐	Equip/Tooling ☐	Supplier ☐	Handling/Pre ☐	Training ☐	Material ☐	Use for Testing ☐	Internal Transport ☐	Poor Information ☐	Tribal Knowledge ☐	Rushing ☐	LOA ☐	Product Improvement ☐	Substation ☐	Process Improvement ☐	Past Expiry Date ☐	☒ Manufacturing Process	Misidentified ☐	Past Due ☐	FAULT CATEGORY <table style="width:100%;"> <tr> <td>☐ Pressure/Forced</td> <td>☐ Temperature/Cure</td> <td>☐ Power Loss/Surge</td> <td>☐ Positioned Wrong</td> </tr> <tr> <td>☒ Bending</td> <td>☐ Set-up</td> <td>☐ Folio/Program</td> <td>☐ Outside Dimensions</td> </tr> <tr> <td>☐ Centre Not Concentric</td> <td>☐ BOM/Route</td> <td>☐ Grain</td> <td>☐ Over/Under tolerance</td> </tr> <tr> <td>☐ Cracks</td> <td>☐ Broken/Damage/Defect</td> <td>☐ Weld</td> <td>☐ Part Incorrect</td> </tr> <tr> <td>☐ Crimp/Kink/Ripple/Wave</td> <td>☐ Inspection Incomplete/Unqualified</td> <td>☐ Wrong Stock Pulled</td> <td>☐ Part Lost/Missing</td> </tr> <tr> <td>☐ Cuffs</td> <td>☐ Contamination</td> <td>☐ Out of Sequence</td> <td>☐ Part Moved</td> </tr> <tr> <td>☐ Crushing</td> <td>☐ Countersink</td> <td>☐ Off-set</td> <td>☐ Drawing</td> </tr> <tr> <td>☐ Heat Treat</td> <td>☐ Cut Too Short</td> <td>☐ Mislabeled</td> <td>☐ Finish</td> </tr> <tr> <td>☐ Wave/Twist in Tube</td> <td>☐ Instructions Incomplete/Unclear</td> <td>☐ Fit/Function</td> <td>☐ Misread</td> </tr> <tr> <td>☐ Marks/Chatter</td> <td>☐ Drill Holes</td> <td>☐ Misaligned/off center</td> <td>☐ Turning Sequence</td> </tr> </table>				☐ Pressure/Forced	☐ Temperature/Cure	☐ Power Loss/Surge	☐ Positioned Wrong	☒ Bending	☐ Set-up	☐ Folio/Program	☐ Outside Dimensions	☐ Centre Not Concentric	☐ BOM/Route	☐ Grain	☐ Over/Under tolerance	☐ Cracks	☐ Broken/Damage/Defect	☐ Weld	☐ Part Incorrect	☐ Crimp/Kink/Ripple/Wave	☐ Inspection Incomplete/Unqualified	☐ Wrong Stock Pulled	☐ Part Lost/Missing	☐ Cuffs	☐ Contamination	☐ Out of Sequence	☐ Part Moved	☐ Crushing	☐ Countersink	☐ Off-set	☐ Drawing	☐ Heat Treat	☐ Cut Too Short	☐ Mislabeled	☐ Finish	☐ Wave/Twist in Tube	☐ Instructions Incomplete/Unclear	☐ Fit/Function	☐ Misread	☐ Marks/Chatter	☐ Drill Holes	☐ Misaligned/off center	☐ Turning Sequence
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